alignment positional deviation quantity R of the resist mark 54 with respect to the base mark 53, is measured. In this case, it must be inevitable that the measurement error TIS calculated by the formula (1) occurs, and it is difficult to obtain the accurate alignment positional deviation quantity R.

Page 18, lines 24-page 19, line 19, delete current paragraph and insert therefore:

Therefore, the CCD camera 30 captures the image of the measuring mark 52 in this field area, and the alignment positional deviation quantity R of the resist mark 54 with respect to the base mark 53, is measured. Then, an error based on the rotationally asymmetric aberration contained in the alignment positional deviation quantity R_0 and an error based on the rotationally asymmetric aberration contained in the alignment positional deviation quantity R_{180}, are cancelled each other in the calculation by the formula (1), resulting in an extremely small measurement error TIS. The accurate alignment positional deviation quantity R can be thereby obtained. Thus, there is set such a field area that the error based on the rotationally asymmetric aberration contained in the alignment positional deviation quantity R_0 and the error based on the rotationally asymmetric aberration contained in the alignment positional deviation quantity R_{180}, are cancelled each other in the calculation by the formula (1), whereby the alignment positional deviation quantity can be always precisely measured irrespective of the elements of the measurement mark.

IN THE CLAIMS

Please replace claims 1-5 as follows:

1. (Amended) An optical positional deviation detecting apparatus for optically detecting a positional deviation in alignment between a first mark and a second mark of a measurement mark configured by forming the second mark on the first mark, comprising:

an irradiation optical system for irradiating the measurement mark with a beam of irradiation;

an image forming optical system for forming an image of the measurement mark by converging reflected beam from the measurement mark;

an imaging device for capturing the image of the measurement mark, which has been formed by said image forming optical system;

an image processing device for measuring the positional deviation in alignment between the first mark and the second mark by processing an image signal obtained by said imaging device; and

an image field position adjustment mechanism for adjusting, in a plane perpendicular to the optical axis, a position of an image field for capturing the image of the measurement mark by said imaging device, while maintaining a size of the image field fixed.

2. (Amended) An optical positional deviation detecting apparatus according to claim 1, wherein said image field position adjustment mechanism comprises a field stop provided on said irradiation optical system, a field stop position adjustment mechanism for adjusting a position of said field stop, in a plane perpendicular to the optical axis, and an imaging device position adjustment mechanism for adjusting a position of said imaging device,

said field stop and an imaging surface of said imaging device are disposed in optically conjugate positions, and

said imaging device position adjustment mechanism adjusts the position of said imaging device in accordance with the field stop positional adjustment effected by said field stop position adjustment mechanism.

3. (Twice Amended) An optical positional deviation detecting apparatus according to claim 1, wherein said image field position adjustment mechanism adjusts the

image field position on the basis of an asymmetric focus characteristic of the line and space mark pattern image obtained when forming the image of the line and space mark pattern within the image field area of said imaging device.

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4. (Amended) An optical positional deviation detecting apparatus according to claim 3, wherein said image field position adjustment mechanism adjusts the image field position so that the asymmetric focus characteristic of the line and space mark pattern image obtained when forming the image of the line and space mark pattern within the image field area of said imaging device, exhibits a characteristic that is symmetric with respect to the axis which passes through the center of the visual field and which is perpendicular to a direction in which the positional deviation is detected.

5. (Amended) An optical positional deviation detecting apparatus according to claim 2, wherein said image field position adjustment mechanism adjusts the image field position on the basis of the asymmetric focus characteristic curve of the line and space mark image at the time when the line and space mark image is formed within the image field area of said imaging device.

(Please add new claims 6-9 as follows)

--6. An optical positional deviation detecting apparatus according to claim 3, wherein said image field position is so adjusted that the focus characteristic on a signal intensity difference at a stepped position on both sides of each line mark or each space mark of at least a set of the line marks or space marks which are symmetric with respect to the center of the image field, among the line marks of said line and space mark, may have a characteristic which is symmetric with respect to the axis which passes through the center of the visual field and which is perpendicular to a direction in which the positional deviation is detected.--

--7. An optical positional deviation detecting apparatus according to claim 3, wherein said image field position adjustment mechanism adjusts said image field position so that,

Cont'd

at least one set of pattern areas which are symmetric with respect to the center of the image field, is selected;

then the focus characteristic curve of a value Q represented by the below formula (1) for each pattern area:

$$Q = 1/n \times \Sigma (\Delta I/I) \qquad (1),$$

where n is the number of lines (spaces) in the selected pattern area;

I is the signal intensity at the non-stepped portion of the pattern or the area therearound;

ΔI is a difference of signal intensity at both sides of the stepped portion in each line (or space) within the selected pattern area, is obtained; and then

the focus characteristic curve may be symmetric with respect to the axis which passes through the center of said image field and which is perpendicular to a detecting direction of said positional deviation in alignment.--

--8. An optical positional deviation detecting apparatus according to claim 1, wherein said image field position is so adjusted that at least one set of areas which are symmetric with respect to the center of the image field is selected and an amount of rotationally asymmetric aberration for every selected area may be symmetric, in a predetermined focal area in which a focused area is included, with respect to the axis which passes through the center of said image field and which is perpendicular to a detecting direction of said positional deviation in alignment.--

--9. An optical adjustment method of an optical positional deviation detecting apparatus for optically detecting a positional deviation in alignment between a first mark and

a second mark of a measurement mark configured by forming the second mark on the first mark, comprising:

an irradiation optical system for irradiating the measurement mark with a beam of irradiation;

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an image forming optical system for forming an image of the measurement mark by converging reflected beam from the measurement mark;

an imaging device for capturing the image of the measurement mark, which has been formed by said image forming optical system; and

an image field position adjustment mechanism for adjusting, in a plane perpendicular to the optical axis, a position of an image field for capturing the image of the measurement mark by said imaging device with maintaining a size of the image field fixed, comprising:

a first adjustment step in which the aperture stop of said irradiation optical system and the aperture stop of said imaging optical system are so adjusted that the focus characteristic having the value of Q as defined in claim 7 relating to said line and space mark in the entirely thereof at the time when the line and space mark image is formed within the image field of said imaging field, may be zero;

a second adjustment step in which a position of the field stop of the irradiation optical system is adjusted on the basis of an asymmetric focus characteristic curve of said line and space mark image; and

a third adjustment step in which the position of said imaging device is adjusted for the image field position adjusted in said second step.--